DOCUMENT RESUME

ED 188 055 CG 014 451

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TITLE Vulnerability to Stress Related Overeating: An Examination of the Frequency and Enjoyability of Pleasant Activities Experienced by College Students with Weight Concerns.
PUB DATE [79]
NOTE 26p.; Paper presented at the Annual Convention of the Southwestern Psychological Association (26th, Oklahoma City, OK, April 10-12, 1980).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adjustment (to Environment); *Body Weight; College Students; Coping; *Eating Habits; *Psychological Patterns; *Reinforcement; Self Control; *Social Behavior; *Stress Variables
IDENTIFIERS *Overeating

ABSTRACT

Awareness and acknowledgement of stress-related overeating and loss of control tendencies may facilitate subsequent weight loss efforts, provided that alternative stress-coping resources are available to aid adjustment to major life changes. College students with weight concerns, particularly those susceptible to "mood" eating and binge episodes, may have a restricted range of activities which provide positive reinforcement. Overweight students in a behavioral weight-control program reported less enjoyment of pleasant activities than normal-weight classroom control subjects. Restrictive dieting tendencies were positively correlated with frequency/enjoyability ratings of socially-related pleasures, and negatively correlated with frequency/enjoyability ratings of non-social pleasures. There is an ambiguous relationship between the amount and variety of pleasurable activities and subsequent body weight fluctuations. (Author)

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Vulnerability to Stress Related Overeating: An Examination of the Frequency and Enjoyability of Pleasant Activities Experienced by College Students with Weight Concerns

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Vulnerability to Stress Related Overeating: An Examination of the Frequency and Enjoyability of Pleasant Activities Experienced by College Students with Weight Concerns

Recent systematic clinical investigations of the relapse patterns of participants in weight control programs have revealed many instances of overeating among "regainers," which appear to be related to emotional "mood" states and/or social pressures (Leon & Chamberlain, 1973a & b; Rosenthal, Marx, & Adams, 1979; Setty, 1979). Jackson and Hawkins (Note 1) have speculated, on the basis of some preliminary data, that awareness and acknowledgement of stress related overeating and loss of control tendencies may facilitate subsequent weight loss efforts, provided that alternative stress-coping resources are available to aid adjustment to major life changes. In this report we search for these elusive stress-coping resources that might serve to "innoculate" the "mood" eater from stress related overeating.

Lewinsohn's (1974) behavioral theory of depression provided the conceptual framework for this preliminary study. There is a well-recognized relationship between depressed mood and loss of appetite leading to weight loss. Paykel (1977), however, in his correlational study of patterns of appetite change in 220 clinically depressed men and women found that although appetite was decreased for 66% (with an additional 20% showing "no change"), for 14% appetite was <u>increased</u>. The depressed overeaters were distinguished by being exclusively female, and more mildly depressed, with neurotic rather than psychotic symptomatology. Similarly, in a laboratory analogue study Ely, Goolkasian, Frost & Blanchard (1979) found that "restrained" female subjects (i.e., those with restrictive dieting tendencies)

in the depressed mood induction condition ate more candy but reported less depression than did their unrestrained counterparts. Since Lewinsohn's theory has postulated a low rate of response-contingent positive reinforcement as an eliciting stimulus for depressive behavior, we decided to investigate whether college students with weight concerns and restrictive dieting tendencies, particularly those susceptible to mood eating (Jackson & Hawkins, Note 1), would differ in the amount or variety of positive reinforcement obtained, particularly for behaviors other than eating. Self-reported frequency and enhoyability ratings of pleasant activities might serve as an index of the adequacy of an individual's repertoire of coping resources, to which Pearlin & Schooler (1978) have shown degree of vulnerability to stress to be inversely related.

A perusal of the research literature (Hawkins, 1977) revealed that the major psychological theories for explaining overeating in non-deprived humans (i.e., where "psychological craving" rather than physiological hunger predominates) have emphasized the importance of supersensitivity to external food-related stimuli (Schacter, 1971), or the difficulty in inhibiting overlearned eating responses (e.g., faulty "brakes" leading to larger sized meals). The possible importance of individual differences in the number of activities that are potentially reinforcing, the availability of reinforcements in the environment, or the overall amount of reinforcement (pleasures) obtained, has not been studied with relation to cognitive and personality correlates of dieting and weight concern.

A preliminary finding from the evaluation of our behavioral weight control program also provided an impetus for this investigation. Overall weight loss percentage was significantly correlated ($r = .31$, $p < .01$) with the total

score on a pilot instrument, the Pleasure Questionnaire, developed by clinical researchers at the Baylor School of Medicine (Gotto et al., Note 2). This serendipitous finding matched our clinical intuitions: one module in the U. T. Psychological Weight Control Program focused upon the importance of the client's learning to increase the frequency of pleasurable non-food-related activities as a substitute for stress related eating. Our clinical impression has been that clients who add such substitute pleasurable activities to their life styles (particularly aerobic activities) report improved mood, motivation, and overall response to treatment and resistance to relapse.

The aim of the present study was to determine the psychometric properties of this Pleasure Questionnaire (PQ) through a construct validation study using a clinical sample of overweight students and a normal weight comparison sample. Of particular importance among the other measures available in this construct validation was the Lewinsohn Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1976).

The specific predictions to be tested were:

(1) The revised, internally consistent Pleasure Questionnaire would yield significant correlations with the appropriate subscales of the Pleasant Events Schedule (PES) (i.e., those subscales measuring the frequency and enjoyability of social and non-socially related pleasant activities),

(2) Overweight subjects in the clinic sample would obtain significantly lower scores on the PQ scale than would subjects in the normative classroom sample.

(3) Both overweight subjects and normal weight "restrained" subjects would report lower enjoyability ratings for activities other than eating, as well as an overall decrease in the amount of reinforcement obtained.

(4) Subjects with tendencies for stress related overeating or binge episodes would report lower scores on the various pleasure scales (PQ and PES).

(5) Subjects reporting higher frequencies of engaging in pleasant activities, and more enjoyment from them, would lose more weight during the one month period subsequent to completing the survey, regardless of the number of major life changes reported in the preceding month. Subjects susceptible to mood eating who also report many recent life changes and lower frequency/enjoyability ratings for pleasant events should not lose weight during this follow-up month.

Method

Subjects

Two samples of college undergraduates and graduates of varying body weights participated in this study. The first sample comprised 140 clients (121 females, 19 males) who participated in the Psychological Weight Control Program at the University of Texas at Austin Student Health Center. Each client had participated in one of twelve broad-spectrum behavioral groups conducted between September, 1976 and December, 1978. Preliminary follow-up data was gathered during the spring semester of 1979 (Setty, 1979). The second sample contained 145 females and 55 males from the second author's abnormal psychology class, who completed the questionnaires for extra course credit. Body weight percentages were calculated as a deviation percentage from the desirable weight for males or females with a medium body frame (Metropolitan Life Insurance Company, 1959; Wollersheim, 1970). The mean percent excess weight for males in the clinic sample was 57.7 percent, while females averaged 44.6 percent overweight. Only five women and eight men in the classroom sample, by comparison, were at least 20 percent overweight.

Procedure

Subjects in both samples received a packet of questionnaires which included a Height-Weight Survey (Hawkins, unpublished) eliciting information about current height and weight and other demographic information. Clients receiving behavioral treatment for weight loss completed the questionnaires during the "baseline" week prior to the start of the program. The packet contained the 27-item "Pleasure Questionnaire" (Gotto, et al., Note 2), which was constructed to assess the amount of enjoyment given by each of the activities listed (Table 1). Additional measures administered to both samples included the Restraint Scale (Herman & Polivy, 1975; Herman, Polivy, Threlkeld, & Munic, 1978), which measures restrictive dieting tendencies, and the Binge scale (Hawkins & Clement, in press).

The subjects in the classroom sample also completed the Negative Self-Image Scale (Hawkins & Clement, in press), which is a measure of dissatisfaction with weight-related appearance, the Life Events Scale (Price & Price, 1974), and the Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1976). The PES is a self-report questionnaire composed of 320 items describing everyday pleasant or rewarding events. These items are rated both with respect to their frequency and their subjective enjoyability over the preceding 30 days (MacPhillamy & Lewinsohn, 1976). For these preliminary analyses, "frequency," "enjoyability," and "frequency X enjoyability" product scores were derived for the following scales: (1) the "T" scale, which measures the general tendency to report activity and to report events as being enjoyable (corrected for social desirability responding); (2) Socially related pleasant activity scales (consisting of separate scales for the "frequency" of engaging in socially related pleasant events, the "enjoyability" of them, and the product

score); and (3) the Non-socially related pleasant activity scales (consisting of separate scales for the "frequency," "enjoyability," and product scores). Note that MacPhillamy & Lewinsohn (1976) originally recommended treating the social/non-social pleasant events scales as a single, bipolar dimension. In the present study, however, these scales are separated into two unipolar dimensions.

In addition to completing these questionnaires, subjects in the classroom sample reported their weight one month later, thus yielding a prospective measure of weight change.

Results

Internal consistency and validation of the Pleasure Questionnaire

The internal consistency of the 27-item Pleasure Questionnaire (PQ) was satisfactory for an experimental instrument (Cronbach's "alpha" = .84, for the classroom sample). A stepwise multiple regression analysis (Nie et al., 1975) next was performed to establish the relationship between this criterion measure and the several subscales of the Pleasant Events (PES). Table 2 provides descriptive statistics for the regression of PQ scores on these predictor variables for the classroom sample. The R^2 value for this regression was .25, adjusted for sample size and the number of predictors. "T-scale" score (i.e., the general tendency to report activities as pleasurable, corrected for social desirability) accounted for 19% ($p < .001$) of the variance in PQ scores; the subscale measuring the enjoyability of social pleasures added 4% ($p < .001$), while the reported frequency of engaging in socially related activities accounted for the remaining 2% of explainable variance ($p < .025$).

Additional data from a different sample of 90 undergraduates showed the PQ scale to be uncorrelated with either the Beck Depression Inventory ($r = -.04$)

or the Zung Depression Scale (r = .00).

From the results of these analyses, the PQ total score appears to measure general ratings of enjoyability of pleasant activities, but reflects primarily the enjoyability of social, as opposed to non-social, pleasant activities.

Comparisons of Pleasure Questionnaire scores between the clinic and classroom samples

As predicted, the PQ total scores of the overweight women and men in the clinic sample were significantly lower than those of the women and men in the normative sample. Table 3 presents the Means, standard deviations, and statistics for these comparisons. It should be noted that this analysis confounds PQ differences due to weight percentage differences between the clinic and classroom samples, with PQ differences due to the "treatment" vs. "classroom" context.

Relationship between the frequency/enjoyability ratings of pleasant activities and personality/cognitive correlates of rigid dieting tendencies

Overweight subjects and normal weight "restrained" subjects were predicted to report fewer activities as enjoyable other than eating. Similarly, persons who overeat during periods of stress and report binge eating problems were expected to obtain lower scores on the pleasure scales. For the classroom, normative sample PQ total scores were not significantly correlated with scores on the Mood Eating Scale, the Binge Scale, the Restraint Scale, or the Negative Self-Image Scale. Partial correlational analyses did reveal that, for the clinic sample of overweight subjects, PQ scores were significantly positively correlated with Restraint scores (r = .25, $p < .05$, two-tailed test), controlling for body weight percentage- The corresponding zero-order correlation between PQ scores and percentage overweight, controlling for Restraint scores, was non-significant (r = -.17, $p < .15$).

A series of hierarchical, stepwise multiple regression analyses (Nie et

al., 1975) were conducted to examine the relationship in the classroom sample between each of the personality/cognitive variables and the several subscales of the Pleasant Events Schedule. In each instance, a "dummy" variable to encode for gender classification was entered into the hierarchical multiple regression equation on the first inclusion step, since women had obtained significantly higher scores than men on the Restraint Scale, the Mood Eating Scale, the Negative Self-Image Scale, and the Binge Scale. The PES subscales failed to account for significant proportions of the variance in mood eating, binge, and negative self-image scores. Table 4, however, shows the significant effects found when Restraint scores were regressed on the predictor variables "gender" (the dummy variable), and the composite product scores on the PES (i.e., "SOCRFAB," the frequency X enjoyability interaction for socially related pleasures; "SNEGAB," the frequency X enjoyability interaction for non-socially related pleasures). The R^2 value for this regression equation was .29 ($p < .001$), adjusted for sample size and number of predictors. Approximately 4% of the variance in Restraint scores was accounted for by the product score for socially related pleasant activities (SOCRFAB), while the product score for non-socially related pleasant activities (SNEGAB) accounted for about 5% of the explainable variance in the criterion. Examination of the standardized "Beta" weights (Table 4) reveals that socially related pleasures were positively related to restraint tendencies (standardized Beta = .49), while non-socially related pleasures were negatively related to Restraint scores (standardized Beta = -.33). This finding was contrary to prediction. (Restraint was predicted to be negatively related to amount of social reinforcement obtained.) However, this finding is consistent with the significant positive correlation observed between restraint tendencies and PQ scores for the clinic sample of overweight subjects. Recall that the PQ scale appears to be mostly a measure of the frequency/enjoy-

ability of socially related pleasant activities (see Table 2).

Relationship between frequency/enjoyability ratings of pleasant activities and subsequent weight fluctuations

The final prediction, to be tested in the classroom sample, was that subjects who reported high frequency and high enjoyability of pleasant events in their lives would be less susceptible to weight gain under conditions of life change stresses. We made a preliminary test of this prediction by performing a series of hierarchical, stepwise multiple regression analyses, controlling for the contribution of gender, since women lost significantly more wight than did men during the one month period subsequent to completion of the questionnaires. Table 5 provides descriptive statistics for these regressions. None of the PES scales contributed significant variance to the weight change criterion.

Discussion

The major finding of this study was that overweight students in a behavioral weight control program reported less enjoyment of plesant activities than did normal weight classroom control subjects. Coupled with the earlier finding (Setty,1979) of a significiant correlation between Pleasure Questionnaire scores at the start of treatment and overall weight loss percentage at follow-up, this result suggests that building coping resources through incorporating a variety and abundance of pleasurable activities into the life style could represent a promising means of primary prevention for stress related overeating and weight regain.

Unfortunately, however, despite the determination that the Pleasure Questionnaire has satisfactory reliability and validity for an experimental instrument, neither this measure nor the more well-known Pleasant Events

Schedule scales predicted weight change in the classroom sample of mostly normal weight students. Although the relationship between the frequency/enjoyability ratings of socially related pleasures and restrictive dieting tendencies attained statistical significance in both samples, this correlation was opposite in sign to that predicted: instead of showing a lower amount of pleasurable activities, "restrained" subjects reported more frequent and enjoyable socially related pleasures. One interpretation of this finding is that the restrained normal weight person after all harbors "Dionysian"-like tendencies which must be held in check through continuous vigilance over what is eaten. On the other hand, for the classroom sample, frequency/enjoyability of non-socially related pleasures was negatively correlated with restraint. This finding suggests the interesting possibility that non-social pleasant activities moderate restrictive dieting concerns and weight preoccupation.

The mechanisms underlying the observed difference in reported pleasures between the overweight and normative samples remains unclear. The methodological limitations of this study should be acknowledged: the Pleasure Questionnaire instrument used with the clinically overweight sample did not enable fine enough distinctions to be drawn among the types of reinforcing activities (e.g., the social vs. non-social distinction). The prospective study of the relationship between frequency/enjoyability of pleasant events and weight change needs to be replicated with a clinically overweight sample, over a longer time period. Use of the Pleasant Events Schedule in future treatment outcome studies seems warranted. In addition, the predictive utility of the Unpleasant Events Schedule (Lewinsohn & Amenson, 1978) and the Daily Hassles Scale (Coyne & Lazarus, 1979) might be assessed. Coyne and

Lazarus (1979) have reported preliminary analyses suggesting that pleasant events, or "uplifts," do not serve a stress-buffering function in ameliorating life stress. However, adding the "hassles score" (i.e., irritation and frustration in daily activities) improved the predictive validity between life change events and symptomatology. Both sets of measures could be utilized clinically in individualized stress-management training to assist persons prone to stress related overeating to prepare for risk situations and thereby avoid relapse and weight regain.

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Footnote

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Table 1

Pleasure Questionnaire

This questionnaire will help you identify various things that give you pleasure. Please mark the choice that best describes the amount of pleasure each item listed gives you. Omit the items that do not apply to you.

	A None	B Very Little	C Much	D Very Much
1. Watching Television				
2. Listening to Radio				
3. Listening to Records or Tapes				
4. Playing Cards				
5. Doing Crossword Puzzles				
6. Reading Books or Magazines				
7. Dancing				
8. Sleeping Late				
9. Shopping				
10. Buying New Clothes				
11. Buying Kitchen Appliances				
12. Buying Records				
13. Telephoning a Friend Long Distance				
14. Visiting Friends				
15. Taking a Relaxing Bath or Shower				
16. Attending Plays or Concerts				
17. Attending Movies				
18. Attending Sporting Events (football, baseball, basketball, hockey, etc.)				
19. Golfing				
20. Bowling				
21. Bicycling				
22. Playing Tennis				
23. Participating in Team Sports (football, baseball, basketball, etc.)				
24. Camping				
25. Traveling				
26. Gardening				
27. Peace and Quiet				

MULTIPLE REGRESSION

TABLE 2

DEPENDENT VARIABLE.. Pleasure Questionnaire total score

SUMMARY TABLE

STEP	VARIABLE ENTERED	REMOVED	FTO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	BETAS	OVERALL F
1	TB		48.02462	.000	.44003	.19363	.19363	1.12	48.02462
2	SOCRFB		12.41296	.001	.49089	.24097	.04735	-.60	31.58904
3	SOCRF		5.21647	.023	.51035	.26046	.01948	.45	23.24440
4	T		3.00187	.085	.52111	.27156	.01110	-.22	18.36002
5	SNEGAB		1.99177	.160	.52810	.27889	.00733	.60	15.16032
6	SNEGB		1.94780	.164	.53481	.28602	.00713	-.44	13.01933
7	SNEGA		.28749	.592	.53579	.28707	.00106	-.16	11.15972
8	TAB		.61714	.433	.53791	.28935	.00227	-.17	9.82262
9	SOCRFAB		.15894	.691	.53846	.28993	.00059	-.15	8.71083

Adjusted R^2 = .25

Key

TB: Enjoyability of Pleasant Activities (General factor, corrected for social desirability)
SOCRFAB: Product Score for Frequency X Enjoyability of Socially Pleasant Activities
SOCRF: Frequency of Socially Pleasant Activities
T: Frequency of Pleasant Activities (General factor, corrected for social desirability response set)
SNEGAB: Product Score for Frequency X Enjoyability of Non-social Pleasant Activities
SNEGA: Frequency of Non-Social Pleasant Activities
TAB: Product Score for Frequency X Enjoyability of Pleasant Activities (General factor, corrected for response bias)
SNEGB: Enjoyability of Non-social Pleasant Activities
SOCRFB: Enjoyability of Socially Pleasnat Activities

TABLE 3

WOMEN

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION
Pleasure questionnaire total scores			
GROUP 1 OVWGT.	85	44.9176	10.019
GROUP 2 NORM.	125	51.4560	9.118

POOLED VARIANCE ESTIMATE

T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
-4.90	208	.000

MEN

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION
Pleasure questionnaire total scores			
GROUP 1 OVWGT.	11	41.9091	10.895
GROUP 2 NORM.	61	51.7541	12.044

POOLED VARIANCE ESTIMATE

T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
-2.53	70	.014

TABLE 4

DEPENDENT VARIABLE.. Restraint scale total scores

SUMMARY TABLE

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE / BETAS		OVERALL F
1	SEX		13.89039	.000	.37478	.14046	.14046	.35	13.89039
2	SOCRFAB		3.76388	.056	.42110	.17732	.03686	.49	9.05297
3	SNEGAB		5.46661	.022	.47766	.22816	.05084	-.33	8.17843
4	TAB		.00415	.949	.47770	.22820	.00004	-.04	6.06127
5	PREWGT		12.98807	.001	.57867	.33485	.10665	.33	8.15554

Adjusted R^2 = .29

Key

SOCRFAB: Product score for Frequency X Enjoyability of Socially Pleasant Activities
SNEGAB: Product score for Frequency X Enjoyability of Non-social Pleasant Activities
TAB: Product score for Frequency X Enjoyability of Pleasant Activities (General factor, corrected for social desirability)
PREWGT: Initial Excess Weight Percentage

MULTIPLE REGRESSION

TABLE 5

DEPENDENT VARIABLE.. NFP - **Net** weight change one month subsequent to study.

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F TO ENTER OR REMOVE	SIGNIFICANCE	MULTIPLE R	R SQUARE	R SQUARE CHANGE	BETAS	OVERALL F
1	SEX		6.39819	.014	.30585	.09354	.09354	-.42	6.39819
2	LCU		3.58395	.063	.37927	.14385	.09030	.17	5.12440
3	SNEGAB		1.22485	.273	.40121	.16097	.01713	-.25	3.83714
4	TB		1.06084	.307	.41928	.17579	.01482	.16	3.14598
5	RSTOT		.53490	.467	.42816	.18332	.00753	.22	2.60393
6	SOCRFAB		.03695	.848	.42878	.18385	.00053	-.07	2.14007
7	PREWGT		9.41964	.003	.54897	.30137	.11752	-.36	3.45096

Key

LCU: Total Score on Life Events Scale
SNEGAB: Product Score for Frequency X Enjoyability of Non-Social Pleasant Activities
TAB: Product Score for Frequency X Enjoyability of Pleasant Activities (General factor, corrected for social desirability)
TB: Enjoyability of Pleasant Activities (General factor, corrected for social desirability)
RSTOT: Total Score on the Restraint Scale
SOCRFAB: Product Score for Frequency X Enjoyability of Socially Pleasant Activities
PREWGT: Initial Excess Weight Percentage